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Presiding Member
Renewables Committee
California Energy Commission
Dockets Office, MS-4
1516 Ninth Street
Sacramento, CA 95814-5512

Jackalyne Pfannenstiel, Commissioner and
Vice Chair
Associate Member
Renewables Committee
California Energy Commission
Dockets Office, MS-4
1516 Ninth Street
Sacramento, CA 95814-5512

Re: New Solar Homes Partnership
Docket No. 06-NSHP-1

Dear Commissioners:

The following comments are in response to the California Energy Commission's ("CEC") Notice of Renewables Committee Workshop on the Design of the New Solar Homes Partnership dated May 13, 2006, in which the CEC requested written comments on a set of questions appearing in Attachment A. Accordingly, Fat Spaniel Technologies, Inc. respectfully submits these comments.

By way of background, Fat Spaniel Technologies, Inc. (hereinafter, "FST") provides independent metering and data monitoring solutions specifically designed for reporting, verifying, and auditing the performance of solar, wind, fuel cell, and other distributed generation installations. The FST team includes engineers, Certified Public Accountants, database designers, software architects and renewable energy experts with experience in renewable energy markets.

FST's detailed comments follow.

Eligible Systems and Specifications - Question #3

CEC Question #3. Would certification of system components promote high-performance systems? If so, what are the standards that would meet the needs of a California solar program?

FST RESPONSE

FST feels strongly that proper third party certification of all individual system components will promote high-performance systems. With respect to the kWh metering equipment used to measure and report on the amount of energy delivered by each PV system, the CEC should require that all meters meet or exceed ANSI C-12 standards with respect to the accuracy of recording kWh produced and used (i.e. within the ANSI C-12 standards for margin of error).

Additionally, the CEC should require that all certified meters meet the following additional requirements:

1) Measurement. All kWh meters shall be bi-directional and report the system's net available / usable power (i.e. net of standby losses, transformer losses, and kWh utilized by the system for items like pumps, tracking systems, etc.).

   FST has seen significant standby and transformer losses on many PV systems. In some cases these losses have almost exceeded PV production. Without installing and properly reading a bi-directional kWh meter these losses are either a) added to PV production thus overstating production or b) not properly deducted from the PV production thus overstating the system benefit of the PV system.

2) Independence. All kWh meters must be read and handled by an independent third-party with no financial stake in the reported data.

3) Auditable. All systems used for remotely reading, processing, and transmitting meter data must be fully and conveniently auditable by the CEC.

4) Comprehensive Data Collection. Meter reading systems must be capable of remotely reading and reporting not only kWh output but other performance data as well (e.g., inverter diagnostic codes, fault flags, and failure codes, grid power quality data, etc.). This requirement is important because additional system performance data significantly increases the value of monitoring by increasing overall system performance, reducing system downtime, and powering other

items such as Renewable Energy Certificate ("REC") tracking and warranty tracking. There is little to no cost increase in monitoring hardware needed for such features.

5) Remote Monitoring Capabilities. All kWh meters must have the ability to be read remotely by an independent third-party monitoring company via any standardized output port and communication protocol (e.g. serial port and ModBus protocol). Providing such remote access encourages better and timelier system maintenance by giving system owners and their installers access to the same information available to the CEC.

6) Frequency of Data Collection. KWh meter data should be collected from the system no less than once a month, ideally on a one- or 15- minute basis so that performance problems can be quickly detected and addressed.

7) Frequency of Data Reporting. KWh meter data from the system should be reported to the CEC no less than once a month. Monthly data reporting will enable the CEC to properly monitor the Partnership on an ongoing basis and continuously encourage high-performance systems.

8) Format of Reported Data. KWh meter data from the system should be reported to the New Solar Homes Partnership in a standardized data format such as CSV or XML with well defined data content.

9) Granularity of Collected Data. Data should be collected for periods no greater than 15 minutes. Such a minimum level of detail follows general utility practice for data sampling and will provide the CEC, system owners, and system installers the minimum level of detail needed to properly diagnose system problems and improve operations.

10) Demand Measurement. All kWh meters should have the ability to measure not only PV system performance but entire building load simultaneously as well. The requirement to measure building demand in near real-time will help inform home owners of actual electrical usage, encourage energy use behavior modifications, and thus help further the CEC's goal of achieving Zero Energy New Homes in new construction.

Collectively, these requirements coupled with the ANSI C-12 standards will reduce the overall cost of data collection and access to performance data and will ensure that underperforming systems are identified promptly and can be returned to high-performance status as quickly as possible.

Additionally, all meter data collected and reported should be available to the system owner and CEC. Any meter data collected by third party monitoring companies or other third parties should be strictly controlled to maintain confidentiality of that data with respect to the system owner.

Procedures - Question #8

CEC Question #8. What should be included in a photovoltaic performance calculation to encourage builders to address all factors under their control to achieve high-performance solar systems?

FST RESPONSE

Because remote monitoring services encourage better and timelier system maintenance they inherently help builders achieve high-performance solar systems. Accordingly, builders should be required to include remote monitoring on each system they install. However, absent such a mandatory requirement by the CEC, any rebate based on a system's calculated performance level should be appropriately increased if a monitoring service is present and decreased if it is not included with the system at the time of commissioning and estimated performance calculation.

Procedures - Question #9

CEC Question #9. How can third-party verifications be made most effective to ensure high-performing, reliable photovoltaic installations?

FST RESPONSE

Third-party verifications can be made most effective if verifications take place at system commissioning/inspection as well as on an on-going basis. Accordingly, in addition to initial system commissioning/inspection, all PV systems should be remotely monitored so that underperforming systems can be identified promptly (via automatic computer analysis), and alerts sent out (automatically via email) to the responsible party to return the system to high-performance status as quickly as possible.

Procedures - Question #10

CEC Question #10. Would monitoring equipment for the homeowner encourage better system maintenance? What equipment would be most useful to the homeowner?

FST RESPONSE

Monitoring definitely encourages better system maintenance. Indeed, in the recent CPUC Staff Proposal, the Energy Division Staff observed the following about PV system availability:

"The best solution is a good, low-cost system to inform residential customers how well their systems are performing and, if their system has a problem, to notify them and advise what to do about it."

In addition to providing data to homeowners, it is crucial that performance monitoring systems provide data remotely to a select number of third parties with a vital interest in optimizing system performance. System installers, inverter companies, and PV panel companies are more attentive to system issues and problems than are residential system owners and are much more proactive in optimizing system performance in a timely fashion. As such, the CEC should require all remote monitoring solutions to provide reporting functions to the system owner and to these parties as well.

Finally, remote monitoring systems should at a minimum monitor an ANSI C-12 certified kWh meter as well as the system's inverter(s). Collected data should be available on demand via web

access with near real-time alerts delivered to responsible parties via email and cellular phone text messaging.

Respectfully submitted,

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